6i
Mc

architects'-engineers' reference manual

standard construction castings

- highway castings
- manholes
- frames—grates
- downspout boots
- wheel guards
- misc. castings

grilles
brick vents
tile vents
ventilators
see sections nos. 20d Mc
architectural file
14c Mc industrial const'n. file

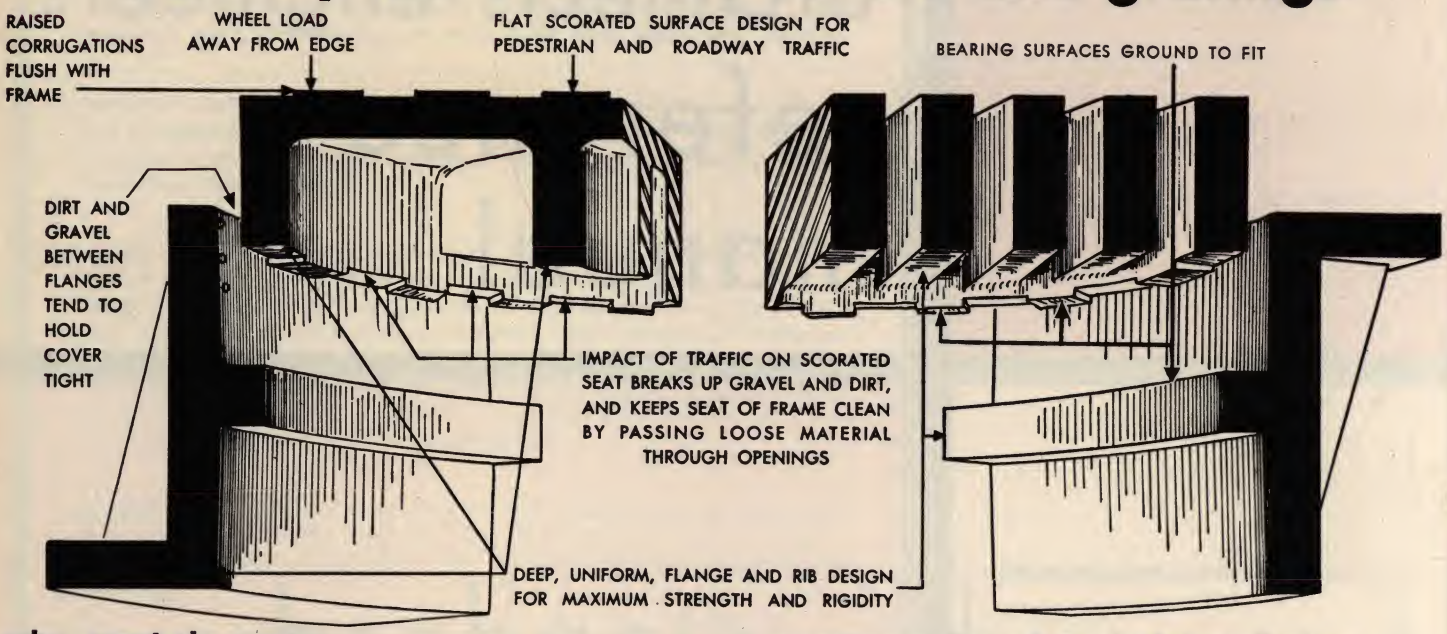
catalog c-60

a.i.a. file 14-a-1 14-a-23

copyright 1958
mckinley iron works
901 n. throckmorton
fort worth, texas

mckinley iron works
p. o. box 790, fort worth, texas

rattle proof manhole covers and gratings


RAISED CORRUGATIONS FLUSH WITH FRAME
WHEEL LOAD AWAY FROM EDGE
FLAT SCORATED SURFACE DESIGN FOR PEDESTRIAN AND ROADWAY TRAFFIC
BEARING SURFACES GROUND TO FIT
DIRT AND GRAVEL BETWEEN FLANGES TEND TO HOLD COVER TIGHT
IMPACT OF TRAFFIC ON SCORATED SEAT BREAKS UP GRAVEL AND DIRT, AND KEEPS SEAT OF FRAME CLEAN BY PASSING LOOSE MATERIAL THROUGH OPENINGS
DEEP, UNIFORM, FLANGE AND RIB DESIGN FOR MAXIMUM STRENGTH AND RIGIDITY

why manhole covers and gratings rattle

Inferior manhole covers or gratings may rattle if the seats are not flat or because of warpage due to bad design or irregular sections in the casting.

BUT: experience proves that the majority of all manholes used today rattle because dirt builds up irregularly and very hard on the bearing seat of the manhole frame, even though the bearing seat may originally be finished perfectly flat.

SCORATED manhole cover and grating seats not only allow the dirt to pass through but the traffic that packs the dirt on the regular manhole seats keeps the seats clean when SCORATED manhole cover seats are used. McKINLEY manhole frames, covers and gratings are NOT made from patterns designed for the horse and buggy traffic of 50 to 100 years ago. Many of these types are still being sold and installed today.

McKINLEY manhole covers and gratings are designed for modern day EXTRA HEAVY TRAFFIC. They have been approved by U. S. ARMY ENGINEERS in air fields for the heaviest bomber planes that weigh many hundreds of tons.

McKINLEY manhole covers and gratings with DEEP flange and rib construction and uniform sections are the last word in modern casting design and give the ultimate in strength and rigidity.

acceptance list of typical installations

AMERICAN BROADCASTING CO., SAN FRANCISCO, CALIF.
PURDUE UNIVERSITY, WEST LAFAYETTE, IND.
ST. THOMAS MOORE HOSPITAL, CANON CITY, COLO.
EL PASO PUBLIC LIBRARY, EL PASO, TEXAS
NEW YORK INTERNATIONAL AIRPORT, NEW YORK, N. Y.
EVERGREEN PRESBYTERIAN CHURCH, MEMPHIS, TENN.
AMON CARTER FIELD, FORT WORTH-DALLAS, TEXAS
ATOMIC ENERGY COMMISSION, LOS ALAMOS, N. M.
SOUTHWESTERN BELL TELEPHONE CO., LAWRENCE, KANSAS
FIRST METHODIST CHURCH, COLORADO SPRINGS, COLO.
UNIVERSITY OF KANSAS, LAWRENCE, KANSAS
U.S. POST OFFICE BUILDING, CHANUTE, KANSAS
SOUTHWESTERN BELL TELEPHONE CO., CISCO, TEXAS
CONTINENTAL BAKING CO., KANSAS CITY, KANSAS
HIGHLAND UNIVERSITY, LAS VEGAS, N. M.
PACIFIC MUTUAL BUILDING, SAN FRANCISCO, CALIF.
GOOD SAMARITAN HOSPITAL, DAYTON, OHIO.
GENERAL ELECTRIC CORP., RICHLAND, WASHINGTON
E. I. DUPONT CO., AUGUSTA, GA.
GENERAL MOTORS CORP., ARLINGTON, TEXAS
AIR CONTROL TOWER, DUGWAY, UTAH
WOLTERS AIR FORCE BASE, MINERAL WELLS, TEXAS
ABILENE AIR FORCE BASE, ABILENE, TEXAS
CARSWELL AIR FORCE BASE, FORT WORTH, TEXAS
SMOKY HILL AIR FORCE BASE, SALINA, KANSAS
HANSCOM AIR FORCE BASE, BEDFORD, MASS
FORT DEVENS, AYER, MASS.
WEBB AIR FORCE BASE, BIG SPRING, TEXAS

general specifications for construction castings

Castings shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage defects, swells, cracks, or other injurious defects. Surface shall be smooth and true to pattern, material used in manufacture of castings shall conform to ASTM specifications A48-48, class 40 iron and/or U. S. Federal Government specification QQ1-652 for gray iron castings.

All castings shall be free from fins, burrs, sand and slag. All castings shall be stress relieved by shot blasting and shall be painted with one coat of rust inhibitive zinc chromate.

McKinley manhole covers and gratings *cost no more!!*

STRENGTH TEST REPORT

3028 10M 9-56

P. B. PORTER, Ch. E., Pres. J. B. BAIRD, Vice Pres. B. P. HARPER, B. S., Vice Pres.

SOUTHWESTERN LABORATORIES
FORT WORTH DALLAS HOUSTON MIDLAND BEAUMONT

Fort Worth, Texas 9-7-56 File No. 164.7

Report of tests on Cast Iron Covers and Grates
To McKinley Iron Works
Received from Same Date Rec'd 9-4-56
Identification Marks As Shown

ITEM	DIMENSIONS	TOTAL LOAD*	P.S.I.**
28" Manhole Cover	28" Dia.,3" Thick	169,500	1178
28" Manhole Grate	28" Dia.,3" Thick	215,250	1496
TGH - 16	16" x 48" x 2½"	251,250	1746
TCH - 16	16" x 48" x 2½"	160,000	1112
TGH - 20	20" x 48" x 2½"	177,000	1230
TCH - 20	20" x 48" x 2½"	152,500	1060

REMARKS: *Total Load as shown above does not include 167.75 lbs. weight of bearing block and lead shield.

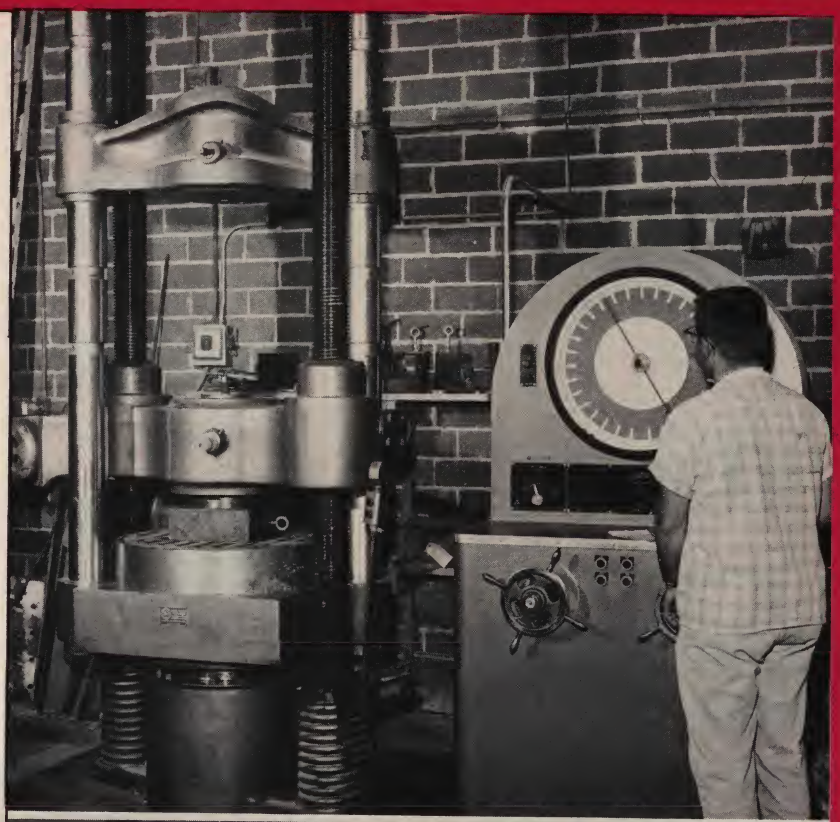
** Bearing surface consisted of 12" x 12" cast block centered on specimens. Weight of block is included in P.S.I.

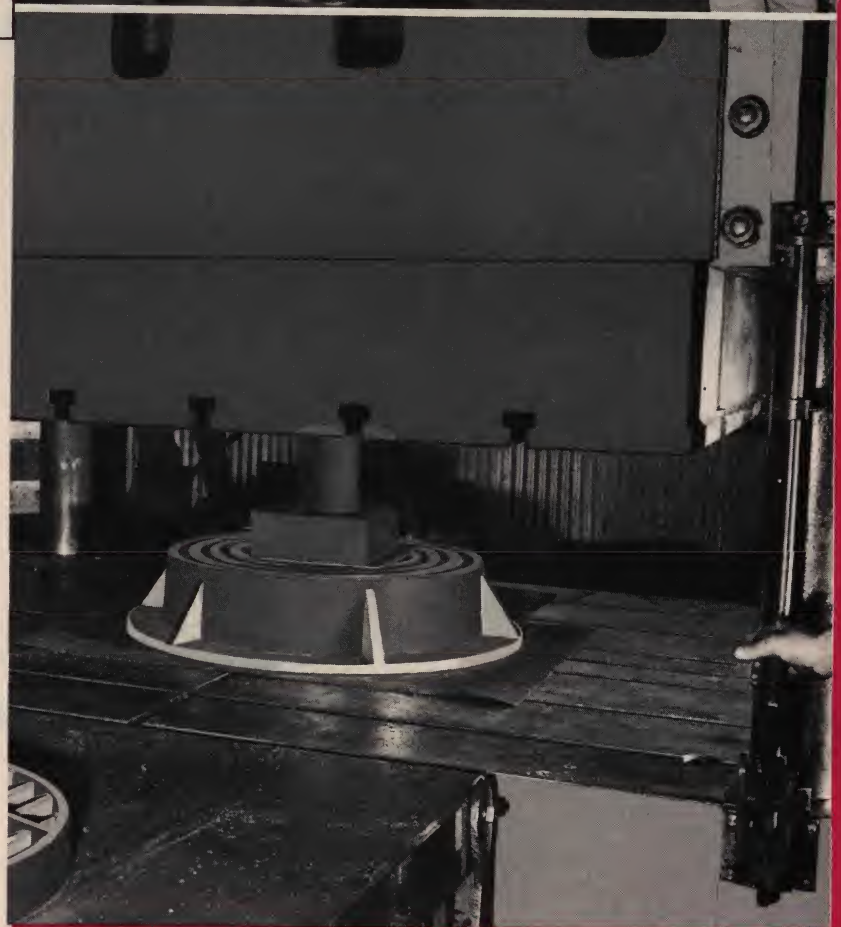
SOUTHWESTERN LABORATORIES

3cc: McKinley Iron Works

Lab. No. B-8443

Our letters and reports are for the exclusive use of the client to whom they are addressed. The use of our name must receive our prior written approval. Our letters and reports apply only to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar products





the tests show the total static loads on 12" x 12" square area in the exact center of each specimen tested. a ¼" inch lead sheet was placed between the specimen and a 12" x 12" x 4" cast iron block, giving an even distribution of load over the one square foot area in the center of the specimens.

the 28 inch manhole cover tested is the cover used in our B28H-N28H-A28H-T28 manhole frames and covers. the 28 inch round grating tested is the grating used in our BG28H-NG28H-AG28H-TG28H manhole frames and grating, pages 5 and 6.

the TGH16-TCH16-TGH20 and TCH20 are shown on page 11. these are covers and gratings especially designed for long trenches across heavy highway traffic ways and for trenches in air fields where heavy loads are encountered.

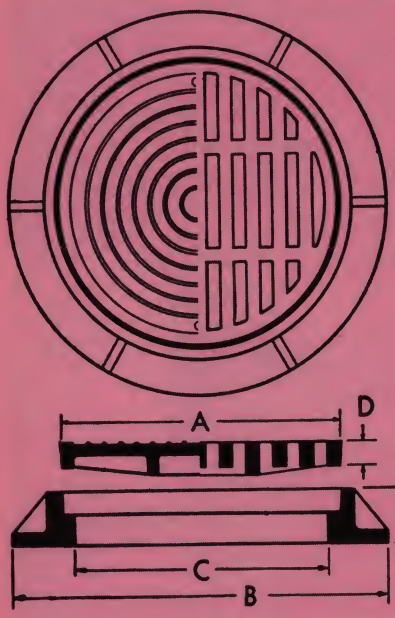
to meet the demands of extra-heavy traffic, we have designed (with the assistance of the U. S. Army Engineers) gratings and covers that we feel will withstand the heavy highway and air field loads.

in order that engineers will have verification of what loads our extra-heavy duty grates and covers will actually hold, we had the southwestern testing laboratories conduct the certified tests shown.

a distinct advantage of using heavy iron gratings and covers is that they never rust out and do not weaken with age. their lifetime is indefinite.

TGH - 16	Replaced By	TGHB - 14
TCH - 16	Heavier and	TCHB - 14
TGH - 20	Bolted Type	TCHB - 18
TCH - 20		TGHB - 18

type A bottom flange heavy and extra-heavy duty



cover

grate

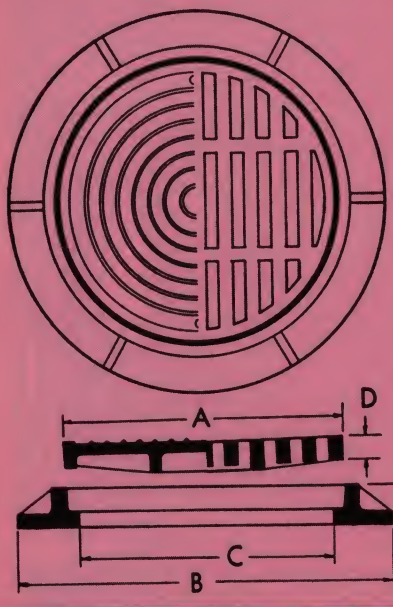
frame

types A and T can be furnished water tight as illustrated on p. 5.

An economical heavy and extra-heavy duty frame and cover designed for average size manholes.

type No.		dimensions, in.				
cover	grate	A	B	C	D	H
heavy duty						
A12M	AG12M	12	16	10	1¼	3
A15M	AG15M	15	20	13	1¼	3
A18M	AG18M	18	23	16	1¼	3
A20M	AG20M	20	26	18	1¼	4
A22M	AG22M	22	29	20	1¼	4
A24M	AG24M	24	32	22	2	4
A24AM	AG24AM	24	32	22	2	5
A24BM	AG24BM	24	32	22	2¼	6
A24CM	AG24CM	24	32	22	2	8½
A26M	AG26M	26	34	24	2	4
A28M	AG28M	28	36	26	2	4
A30M	AG30M	30	38	28	2	4
A32M	AG32M	32	40	30	2	4
A34M	AG34M	34	42	32	2	4
A36M	AG36M	36	44	34	2	4
A38M	AG38M	38	46	36	2	4
extra-heavy duty						
A12H	AG12H	12	16	10	1½	3½
A15H	AG15H	15	20	13	1½	3½
A18H	AG18H	18	23	16	2	4
A20H	AG20H	20	26	18	2	4
A22H	AG22H	22	29	20	2	4
A24H	AG24H	24	32	22	3	5
A26H	AG26H	26	34	24	3	5
A28H	AG28H	28	37	26	3	5
A30H	AG30H	30	38	28	3	5
A32H	AG32H	32	40	30	3	5½
A34H	AG34H	34	42	32	3	5½
A36H	AG36H	36	44	34	3	5½
A38H	AG38H	38	46	36	3	6

type T for pit or slab construction heavy and extra-heavy duty



cover

grate

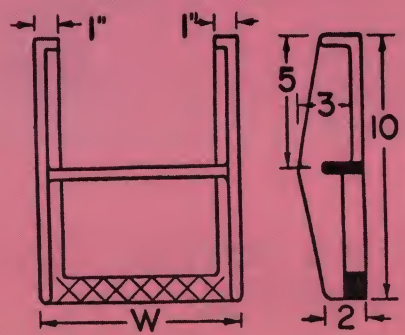
frame

types A and T can be furnished water tight as illustrated on p. 5.

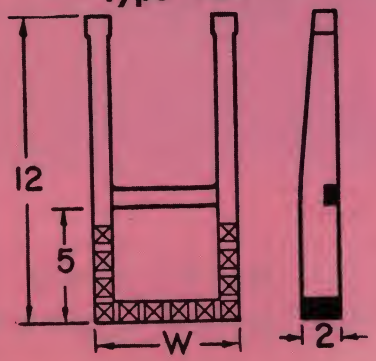
The shallow frame makes this unit suitable for both slab and pit construction. It is inexpensive and available in both heavy and extra heavy duty.

type no.		dimensions, in.				
cover	grate	A	B	C	D	H
heavy duty						
T12M	TG12M	12	16	10	1¼	2
T15M	TG15M	15	20	13	1¼	2
T18M	TG18M	18	23	16	1¼	2
T20M	2G20M	20	26	18	1¼	2
T22M	TG22M	22	27	20	1¼	2
T24M	TG24M	24	32	22	2	2¾
T26M	TG26M	26	34	24	2	2¾
T28M	TG28M	28	36	26	2	2¾
T30M	TG30M	30	38	28	2	2¾
T32M	TG32M	32	40	30	2	2¾
T34M	TG34M	34	42	32	2	2¾
T36M	TG36M	36	44	34	2	2¾
T38M	TG38M	38	46	36	2	2¾
extra heavy duty						
T12H	TG12H	12	16	10	1½	2½
T15H	TG15H	15	20	13	1½	2½
T18H	TG18H	18	23	16	2	3
T20H	TG20H	20	26	18	2	3
T22H	TG22H	22	27	20	2	3
T24H	TG24H	24	32	22	3	4
T26H	TG26H	26	34	24	3	4
T28H	TG28H	28	36	26	3	4
T30H	TG30H	30	38	28	3	4
T32H	TG32H	32	40	30	3	4
T34H	TG34H	34	42	32	3	4
T36H	TG36H	36	44	34	3	4
T38H	TG38H	38	46	36	3	4

type MS2



type MS3



safety manhole steps

Treading surface of all manhole steps impregnated with small abrasive grit for maximum safety under dry, wet or greasy conditions. They never rust-out.

Both types furnished in following widths:
W., in.: 6, 8, 10, 12, 15, 18, 20, 24

heavy duty

bottom flange type no.		top flange type no.		dimensions, in.				
cover	grate	cover	grate	A	B	C	D	H
B12M	BG12M	N12M	NG12M	12	16	10	1¼	3
B15M	BG15M	N15M	NG15M	15	20	13	1¼	3
B18M	BG18M	N18M	NG18M	18	23	16	1¼	3½
B20M	BG20M	N20M	NG20M	20	26	18	1¼	3½
B22M	BG22M	N22M	NG22M	22	29	20	1¼	3½
B24M	BG24M	N24M	NG24M	24	32	22	2	5¼
B26M	BG26M	N26M	NG26M	26	35	24	2	5¼
B27M	BG27M	N27M	NG27M	27	37	25	2	5¼
B28M	BG28M	N28M	NG28M	28	38	26	2	5¼
B30M	BG30M	N30M	NG30M	30	40	28	2	5¼
B32M	BG32M	N32M	NG32M	32	42	30	2	5¼
B34M	BG34M	N34M	NG34M	34	43	32	2	5¼
B36M	BG36M	N36M	NG36M	36	46	34	2	5¼
B38M	BG38M	N38M	NG38M	38	48	36	2	5¼
B42M	BG42M	N42M	NG42M	42	52	39½	2	5¼
B48M	BG48M	N48M	NG48M	48	58	45½	2	5¼
B54M	BG54M	N54M	NG54M	54	64	51½	2	5¼
B60M	BG60M	N60M	NG60M	60	70	57½	2	5¼

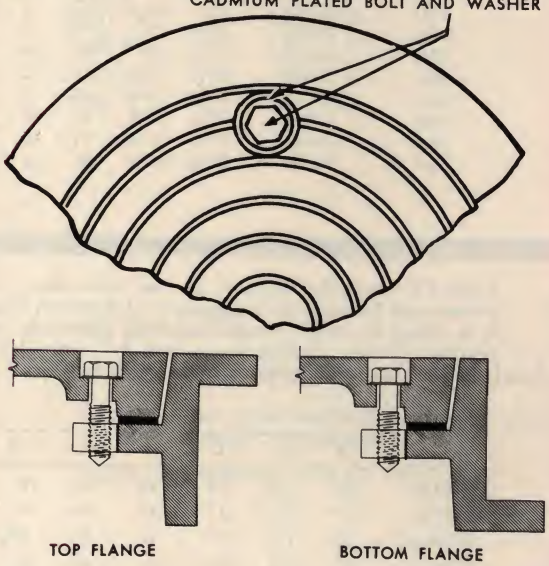
extra heavy duty

B12H	BG12H	N12H	NG12H	12	16	10	1½	3½
B15H	BG15H	N15H	NG15H	15	20	13	1½	3½
B18H	BG18H	N18H	NG18H	18	23	16	2	5¼
B20H	BG20H	N20H	NG20H	20	26	18	2	5¼
B22H	BG22H	N22H	NG22H	22	29	20	2	5¼
B24H	BG24H	N24H	NG24H	24	32	22	3	7½
B26H	BG26H	N26H	NG26H	26	35	24	3	7½
B27H	BG27H	N27H	NG27H	27	37	25	3	7½
B28H	BG28H	N28H	NG28H	28	38	26	3	7½
B30H	BG30H	N30H	NG30H	30	40	28	3	7½
B32H	BG32H	N32H	NG32H	32	42	30	3	7½
B34H	BG34H	N34H	NG34H	34	43	32	3	7½
B36H	BG36H	N36H	NG36H	36	46	34	3	7½
B38H	BG38H	N38H	NG38H	38	48	36	3	7½
B42H	BG42H	N42H	NG42H	42	52	39½	3	7½
B44H	BG44H	N44H	NG44H	44	57	41½	3	7½*
B48H	BG48H	N48H	NG48H	48	58	45½	3	7½
B54H	BG54H	N54H	NG54H	54	64	51½	3	7½
B60H	BG60H	N60H	NG60H	60	70	57½	3	7½

* N44H, B44H, or SB44H can be furnished with a 24" diameter flush type center access cover—10" deep frame also optional.

Square bottom flange eliminates need for concrete forming over square pit.

Specify type SB instead of B when desiring square bottom flange.

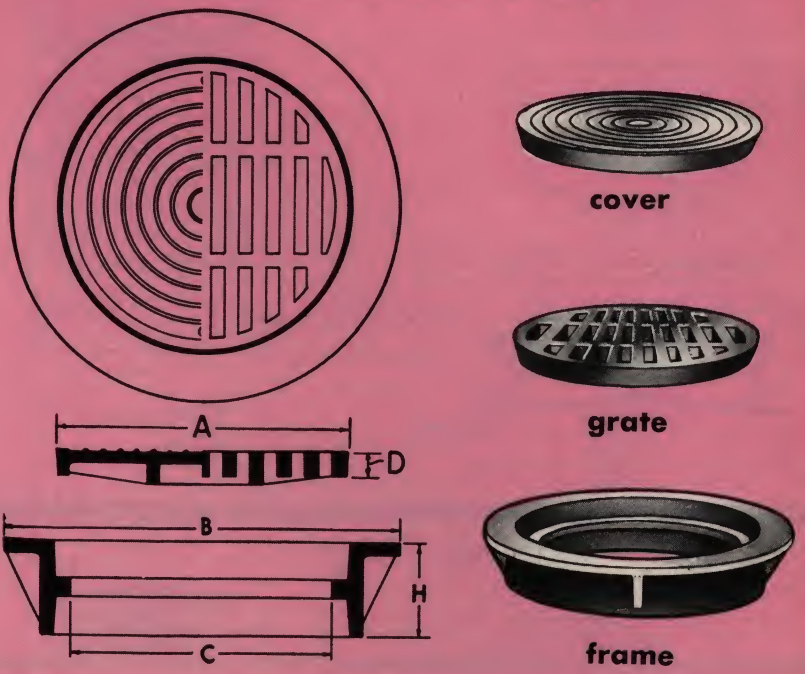


water and pressure tight manholes

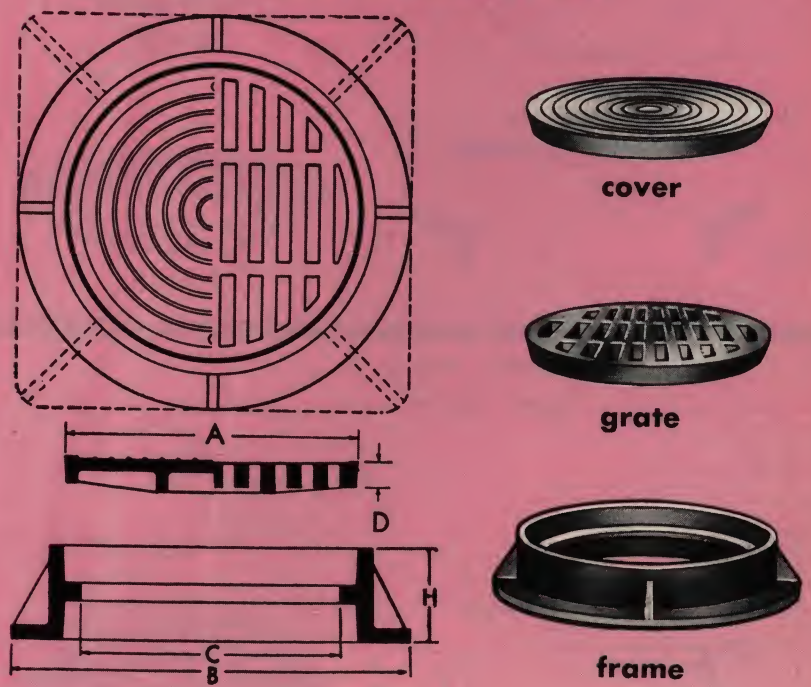
When specifying water or pressure tight manholes add symbols WP before N, B, or SB.

All N, B, and SB manholes can be furnished water and pressure tight as per above details when specified.

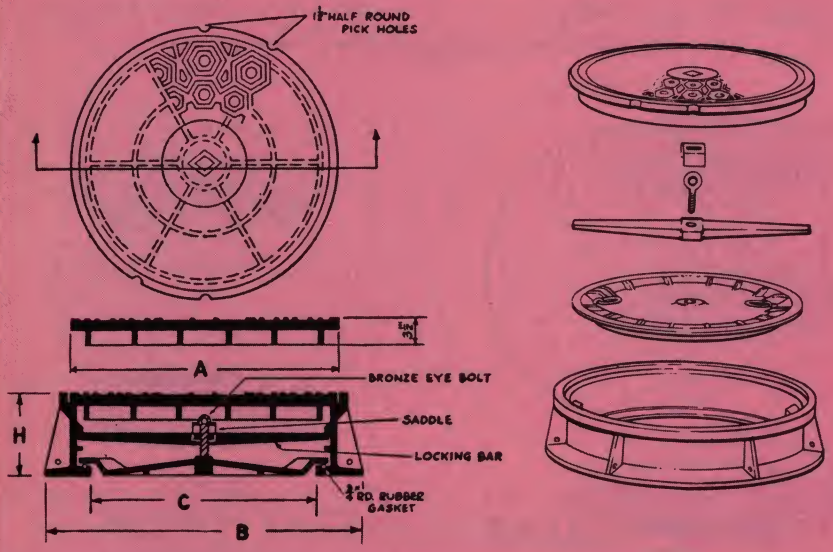
type N top flange
heavy and extra-heavy duty



type B round bottom flange
type SB square bottom flange
heavy and extra-heavy duty



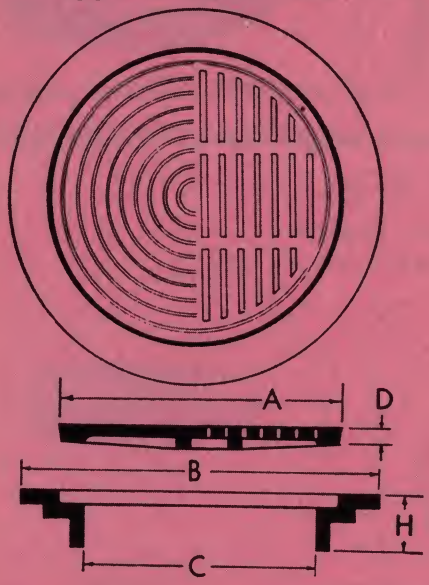
type D-C heavy duty, water tight

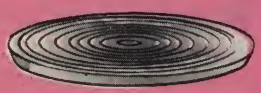


Inside cover is water or gas tight. Provision is made for a padlock to discourage tampering and burglary. Furnished with bar, saddle and brass screw for locking with padlock. Ideal for electrical or other hazardous applications.

type no.	A	B	C	H
DC24	30	38	24	10
DC30	36	42½	30	11

type S light duty





cover

grate

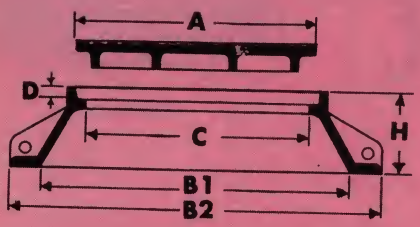
frame

Can be furnished water tight—drilled, countersunk, flat head screws

Abrasive non-skid surface furnished upon request for sidewalk and interior applications. Grate openings narrow for safe walking surface.

type no.		dimensions, in.				
cover	grate	A	B	C	D	H
S 8L	SG 8L	8	9½	7		1
S10L	SG10L	10	11½	9		1
S12L	SG12L	12	13½	11		1
S14L	SG14L	14	15½	13	⅝	1
S16L	SG16L	16	18	15		1½
S18L	SG18L	18	20	17		1½
S20L	SG20L	19½	22	18		4
S24L	SG24L	23½	26	22	¾	6
S26L	SG26L	25½	29½	24	¾	4
S30L	SG30L	29½	33½	28	¾	4
S32L	SG32L	31½	35½	30	¾	4
S36L	SG36L	35½	39½	34	¾	4
S38L	SG38L	37½	41½	36	¾	4

type ET heavy duty
light duty



Type ET Manhole is used by the American Telephone and Telegraph Company and Western Union. It is used to cover large manhole openings with smaller covers. Round base can be extended to any size rectangular base upon specifications.

type nos.	A	D	C	B1	B2	H
ET24M	26	1⅜	24	35	43	10
ET27M	29	1⅜	27	38	46	10
ET27MX	29	1⅜	27	34	46	5⅝
ET30M	32	1⅜	30	41	49	10
ET30MX	32	1⅜	30	37	49	5⅝

type LHA hinged cover and frame abrasive surface

flush type—brass hinges—locking hasp—padlock pocket—lifting ring, all recessed

type nos. W	L	A	B	E	F	H	no. of covers
LHM— 18	x 24	22	28	16¾	22¾	2⅝	1
LHM— 20	x 20	24	24	18¾	18¾	2⅝	1
LHM— 24	x 24	28	28	22¾	22¾	2⅝	1
LHM— 30	x 24	28¼	28¾	28¾	22¾	2⅝	1
LHM— 30	x 30	34¼	34¼	28¾	28¾	4	1
LHM— 36	x 30	40	34¼	34¼	28¾	4½	1†
LHM— 36	x 36	40	40	34¼	34¼	5½	1†
LHM— 36	x 24	42	30	34	22	5	2
LHM— 40	x 20	46	26	38	18	5	2
LHM— 48	x 24	54	30	46	22	5	2
LHM— 60	x 24	66	30	58	22	5	2
LHM— 60	x 30	66	36	58	28	5	2
LHM— 72	x 30	78	36	70	28	5	2
LHM— 72	x 36	78	42	70	34	5	2

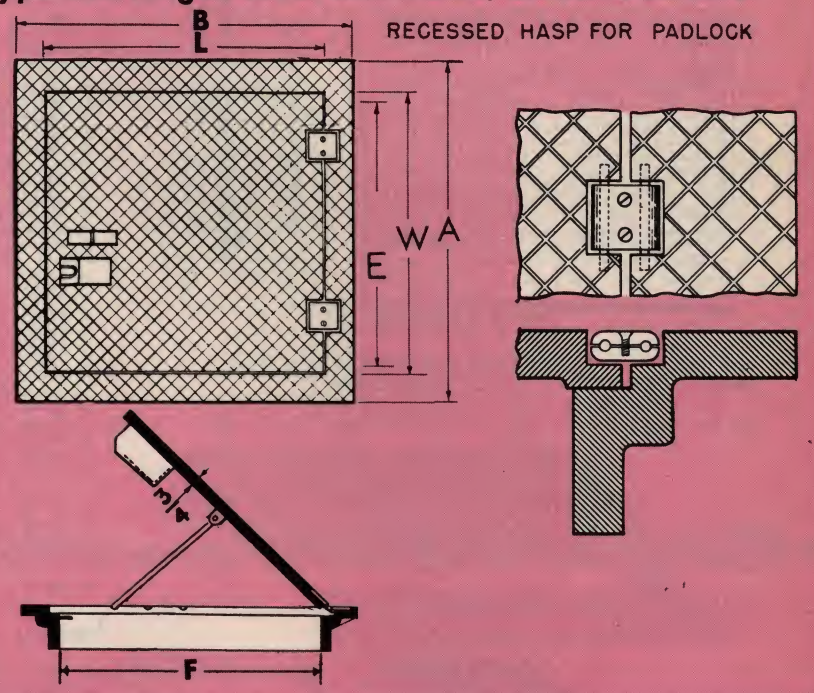
flush mounted brass hinges will allow full 180 degree door opening. padlock pocket, locking hasp and lifting hook all recessed below surface.

can be furnished without padlock pocket and locking hasp. adjustable catch furnished when specified.

can be furnished with abrasive top surface on both cover and frame when specified.

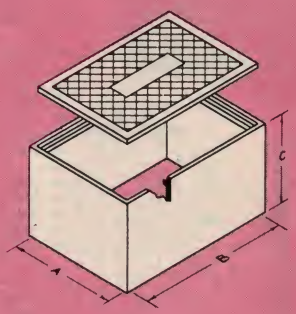
† 3 hinges per cover

type LHA hinged cover and frame, abrasive surface



type MB meter or valve box

type	A	B	C
MB8B	8	8	10
MB8C	8	8	8
MB8D	8	8	6
MB12B	12	12	10
MB12C	12	12	8
MB12D	12	12	6
MB14	14	22	10



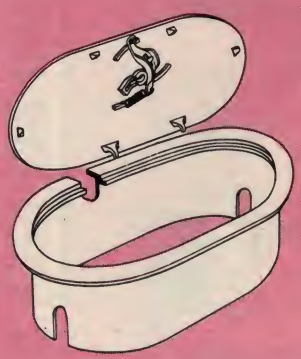
valve box type VB5

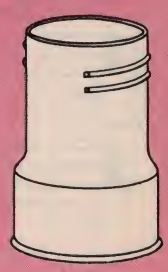
Adjustable Overall Length 1'-8½" to 2'-3½"

type LMB meter box and cover with lock

lock operated with handle sized key for quick reading of meter. tamper-proof.

inside dimensions: 13" x 21" x 11" deep.





mckinley iron works
fort worth, texas

standard construction castings

rectangular covers — gratings — frames

light duty

cover & J frame type no's W L	grating & J frame type no's W L	cover & R frame type no's W L	grating & R frame type no's W L	dimensions, in. D	A	B	E	F	HJ	HR	no. covers or grates
JL 14x14	JGL 14x14	RL 14x14	RGL 14x14	¾	17	17	12¼	12¼	1⅜	2¼	1
JL 16x16	JGL 16x16	RL 16x16	RGL 16x16	¾	19	19	14¼	14¼	1⅜	2¼	1
JL 18x18	JGL 18x18	RL 18x18	RGL 18x18	¾	22	22	16¼	16¼	1⅜	2¼	1
JL 18x24	JGL 18x24	RL 18x24	RGL 18x24	¾	22	28	16¼	22¼	1⅜	2¼	1
JL 18x30	JGL 18x30	RL 18x30	RGL 18x30	¾	22	34	16¼	28¼	1⅜	2¼	1
JL 18x36	JGL 18x36	RL 18x36	RGL 18x36	¾	22	40	16¼	34¼	1⅜	2¼	1
JL 18x48	JGL 18x48	RL 18x48	RGL 18x48	¾	23	53	16¼	46¼	1⅜	2¼	2
JL 20x20	JGL 20x20	RL 20x20	RGL 20x20	¾	24	24	18¼	18¼	1⅜	2¼	1
JL 20x24	JGL 20x24	RL 20x24	RGL 20x24	¾	24	28	18¼	22¼	1⅜	2¼	1
JL 20x30	JGL 20x30	RL 20x30	RGL 20x30	¾	24	34	18¼	28¼	1⅜	2¼	1
JL 20x36	JGL 20x36	RL 20x36	RGL 20x36	¾	24	40	18¼	34¼	1⅜	2¼	1
JL 20x48	JGL 20x48	RL 20x48	RGL 20x48	¾	25	53	18½	46½	1⅜	2¼	2
JL 24x24	JGL 24x24	RL 24x24	RGL 24x24	¾	28	28	22¼	22¼	1⅜	2¼	1
JL 24x30	JGL 24x30	RL 24x30	RGL 24x30	¾	28	34	22¼	28¼	1⅜	2¼	1
JL 24x36	JGL 24x36	RL 24x36	RGL 24x36	¾	28	40	22¼	34¼	1⅜	2¼	1
JL 24x40	JGL 24x40	RL 24x40	RGL 24x40	¾	28	44	22¼	38¼	1⅜	2¼	1
JL 24x48	JGL 24x48	RL 24x48	RGL 24x48	¾	29	53	22½	46½	1⅜	2¼	2
JL 24x60	JGL 24x60	RL 24x60	RGL 24x60	¾	29	65	22½	58½	1⅜	2¼	2
JL 24x72	JGL 24x72	RL 24x72	RGL 24x72	¾	29	77	22½	70½	1⅜	2¼	2
JL 30x30	JGL 30x30	RL 30x30	RGL 30x30	¾	35	35	28¼	28¼	1⅜	2¼	1
JL 30x36	JGL 30x36	RL 30x36	RGL 30x36	¾	35	41	28¼	34¼	1⅜	2¼	1
JL 30x48	JGL 30x48	RL 30x48	RGL 30x48	¾	35	53	28½	46½	1⅜	2¼	2
JL 30x60	JGL 30x60	RL 30x60	RGL 30x60	¾	35	65	28½	58½	1⅜	2¼	2
JL 30x72	JGL 30x72	RL 30x72	RGL 30x72	¾	35	77	28½	70½	1⅜	2¼	2
JL 36x36	JGL 36x36	RL 36x36	RGL 36x36	¾	41	41	34½	34½	1⅜	2¼	1
JL 36x48	JGL 36x48	RL 36x48	RGL 36x48	¾	41	53	34½	46½	1⅜	2¼	2
JL 36x60	JGL 36x60	RL 36x60	RGL 36x60	¾	41	65	34½	58½	1⅜	2¼	2
JL 36x72	JGL 36x72	RL 36x72	RGL 36x72	¾	41	77	34½	70½	1⅜	2¼	2
JL 42x42	JGL 42x42	RL 42x42	RGL 42x42	¾	48	48	40½	40½	1⅜	2¼	1

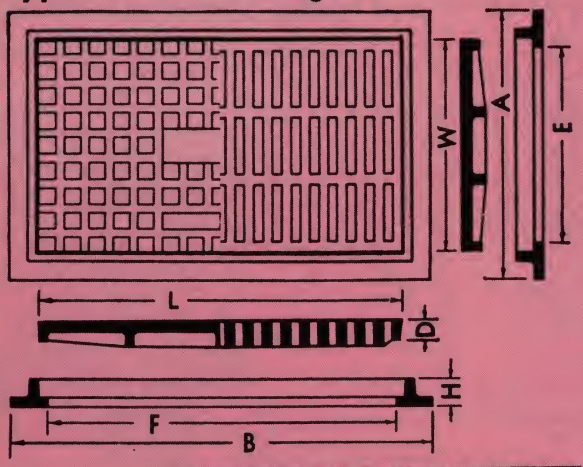
heavy duty

JM 16x16	JGM 16x16	RM 16x16	RGM 16x16	1¼	20	20	14½	14½	2	3½	1
JM 18x18	JGM 18x18	RM 18x18	RGM 18x18	1¼	23	23	16½	16½	2	3½	1
JM 18x24	JGM 18x24	RM 18x24	RGM 18x24	1¼	23	29	16½	22½	2	3½	1
JM 18x30	JGM 18x30	RM 18x30	RGM 18x30	1¼	23	35	16½	28½	2	3½	1
JM 18x36	JGM 18x36	RM 18x36	RGM 18x36	1¼	23	41	16½	34½	2	3½	1
JM 18x48	JGM 18x48	RM 18x48	RGM 18x48	1½	24	54	16	46	2½	3½	2
JM 20x20	JGM 20x20	RM 20x20	RGM 20x20	1½	25	25	18	18	2½	4	1
JM 20x24	JGM 20x24	RM 20x24	RGM 20x24	1½	25	29	18	22	2½	4	1
JM 20x30	JGM 20x30	RM 20x30	RGM 20x30	1½	25	35	18	28	2½	4	1
JM 20x36	JGM 20x36	RM 20x36	RGM 20x36	1½	25	41	18	34	2½	4	1
JM 20x48	JGM 20x48	RM 20x48	RGM 20x48	1½	27	55	18	46	2½	4	2
JM 24x24	JGM 24x24	RM 24x24	RGM 24x24	2	30	30	22	22	3	5	1
JM 24x30	JGM 24x30	RM 24x30	RGM 24x30	2	30	36	22	28	3	5	1
JM 24x36	JGM 24x36	RM 24x36	RGM 24x36	2	30	42	22	34	3	5	1
JM 24x40	JGM 24x40	RM 24x40	RGM 24x40	2	30	46	22	38	3	5	1
JM 24x48	JGM 24x48	RM 24x48	RGM 24x48	2	31	55	22	46	3	5	2
JM 24x60	JGM 24x60	RM 24x60	RGM 24x60	2	32	68	22	58	3	5	2
JM 24x72	JGM 24x72	RM 24x72	RGM 24x72	2	32	80	22	70	3	5	2
JM 30x30	JGM 30x30	RM 30x30	RGM 30x30	2	37	37	28	28	3	5	1
JM 30x36	JGM 30x36	RM 30x36	RGM 30x36	2	37	43	28	34	3	5	1
JM 30x48	JGM 30x48	RM 30x48	RGM 30x48	2	38	56	28	46	3	5	2
JM 30x60	JGM 30x60	RM 30x60	RGM 30x60	2	38	68	28	58	3	5	2
JM 30x72	JGM 30x72	RM 30x72	RGM 30x72	2	38	80	28	70	3	5	2
JM 36x36	JGM 36x36	RM 36x36	RGM 36x36	2	43	43	34	34	3	5	1
JM 36x48	JGM 36x48	RM 36x48	RGM 36x48	2	44	56	34	46	3	5	2
JM 36x60	JGM 36x60	RM 36x60	RGM 36x60	2	44	68	34	58	3	5	2
JM 36x72	JGM 36x72	RM 36x72	RGM 36x72	2	44	80	34	70	3	5	2
JM 42x42	JGM 42x42	RM 42x42	RGM 42x42	2	50	50	40	40	3	5	1

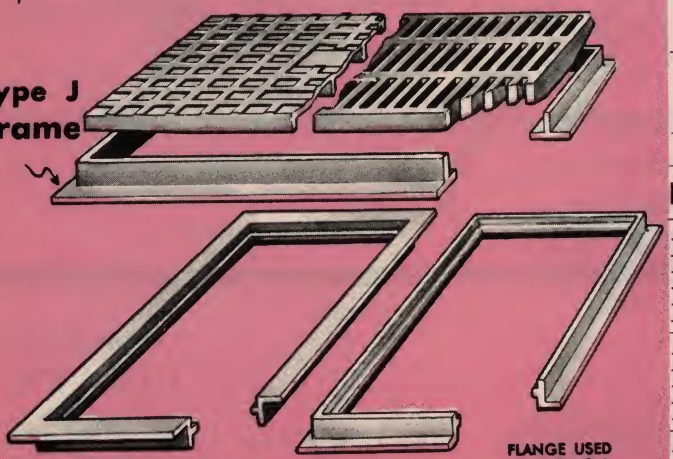
extra heavy duty

JH 16x16	JGH 16x16	RH 16x16	RGH 16x16	2	21	21	14	14	3	5	1
JH 18x18	JGH 18x18	RH 18x18	RGH 18x18	2	24	24	16	16	3	5	1
JH 18x24	JGH 18x24	RH 18x24	RGH 18x24	2	24	30	16	22	3	5	1
JH 18x30	JGH 18x30	RH 18x30	RGH 18x30	2	24	36	16	28	3	5	1
JH 18x36	JGH 18x36	RH 18x36	RGH 18x36	2	24	42	16	34	3	5	1
JH 18x48	JGH 18x48	RH 18x48	RGH 18x48	2	25	55	16	46	3	5	2
JH 20x20	JGH 20x20	RH 20x20	RGH 20x20	2½	26	26	18	18	3½	6	1
JH 20x24	JGH 20x24	RH 20x24	RGH 20x24	2½	26	30	18	22	3½	6	1
JH 20x30	JGH 20x30	RH 20x30	RGH 20x30	2½	26	36	18	28	3½	6	1
JH 20x36	JGH 20x36	RH 20x36	RGH 20x36	2½	26	42	18	34	3½	6	1
JH 20x48	JGH 20x48	RH 20x48	RGH 20x48	2½	28	56	18	46	3½	6	2
JH 24x24	JGH 24x24	RH 24x24	RGH 24x24	3	32	32	22	22	4	7	1
JH 24x30	JGH 24x30	RH 24x30	RGH 24x30	3	32	38	22	28	4	7	1
JH 24x36	JGH 24x36	RH 24x36	RGH 24x36	3	32	44	22	34	4	7	1
JH 24x40	JGH 24x40	RH 24x40	RGH 24x40	3	32	48	22	38	4	7	1
JH 24x48	JGH 24x48	RH 24x48	RGH 24x48	3	33	57	22	46	4	7	2
JH 24x60	JGH 24x60	RH 24x60	RGH 24x60	3	33	69	22	58	4	7	2
JH 24x72	JGH 24x72	RH 24x72	RGH 24x72	3	33	81	22	70	4	7	3
JH 30x30	JGH 30x30	RH 30x30	RGH 30x30	3	38	38	28	28	4	7	1
JH 30x36	JGH 30x36	RH 30x36	RGH 30x36	3	38	44	28	34	4	7	1
JH 30x48	JGH 30x48	RH 30x48	RGH 30x48	3	39	57	28	46	4	7	2
JH 30x60	JGH 30x60	RH 30x60	RGH 30x60	3	39	69	28	58	4	7	2
JH 30x72	JGH 30x72	RH 30x72	RGH 30x72	3	39	81	28	70	4	7	3
JH 36x36	JGH 36x36	RH 36x36	RGH 36x36	3	44	44	34	34	4½	7	1
JH 36x48	JGH 36x48	RH 36x48	RGH 36x48	3	45	57	34	46	4½	7	2
JH 36x60	JGH 36x60	RH 36x60	RGH 36x60	3	45	69	34	58	4½	7	2
JH 36x72	JGH 36x72	RH 36x72	RGH 36x72	3	45	81	34	70	4½	7	3
JH 42x42	JGH 42x42	RH 42x42	RGH 42x42	3	51	51	40	40	4½	7	1
JH 48x48	JGH 48x48	RH 48x48	RGH 48x48	3	59	59	46	46	4½	7	1

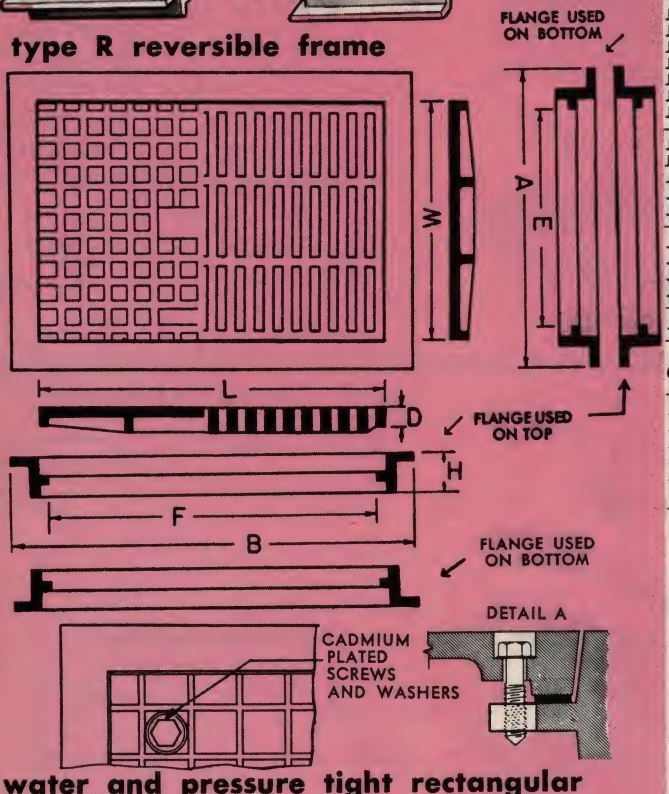
type J bottom flange



type J frame



type R reversible frame



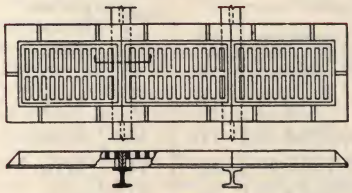
water and pressure tight rectangular frames and covers

All sizes using one cover can be furnished water and pressure tight as per detail A, in both J and R types. For R types, specify whether flange to be used on top or bottom.

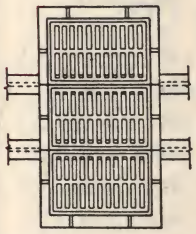
All frames with 2 or more covers or gratings are bolted at all four corners.

All covers 24 x 30 and larger have 2 lifting hooks.

arrangement A



For curb inlets, frames are cast without flange next to curb. Any number of grates may be used together in arrangement "A" or "B". When ordered for multiple installations, bottom flange is omitted and the two frames are provided with holes for bolting frames together. Non-corrosive I-beams used to support multiple grates. Bearing lugs are designed to prevent rocking of the grate.

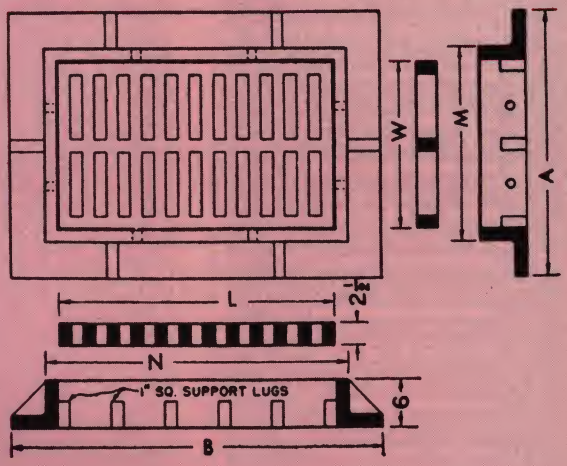


arrangement B

type	W	L	A	B	M	N
K1H	16	30	26	38	18	32
K2H	16	36	26	44	18	38
K3H	18	30	28	38	20	32
K4H	18	36	28	44	20	38

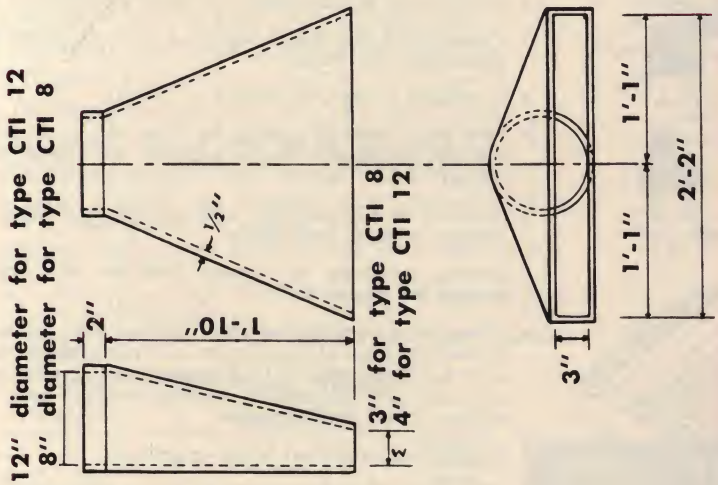
I-Beams—Non-corrosive cast iron 4"x6"x¾" metal thickness

type K for inlet, heavy duty



type CTI

curb throat inlets for expressways



test data on double throat inlet

% grade	½	1	1½	2	2½	3½	4
efficiency	100	99	97½	96	93	87	85

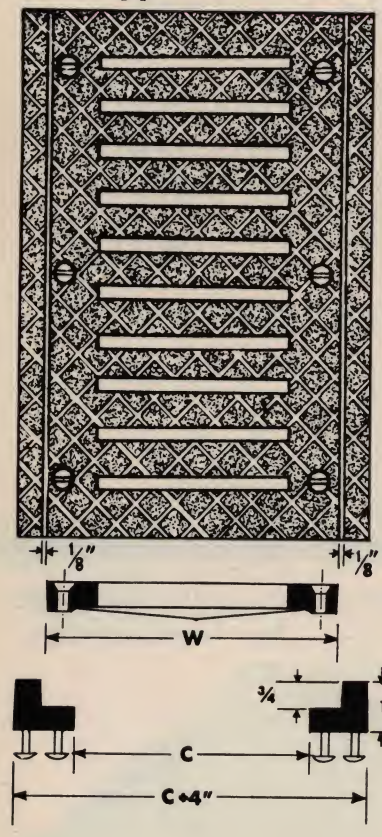
for 6 foot pondering or 1½ inches of water at curb, capacity of inlet is 0.75 c.f.s. on a 4% grade (greater capacities on flatter grade) with a safety factor of one-third. at 0.75 c.f.s. actual test shows one throat carries two-thirds of water.

type DB drop ball (wrecking ball)

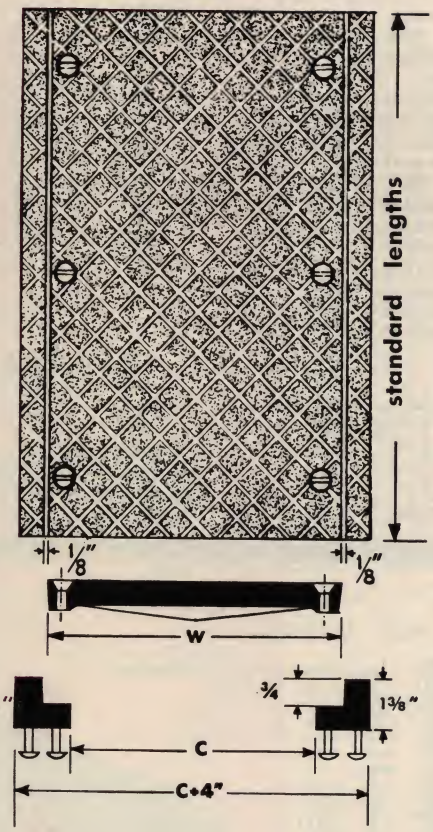
type	lbs.
DB 10	1000
DB 15	1500
DB 20	2000
DB 30	3000
DB 45	4500
DB 60	6000

- Eye Pin Replaceable
- Stand upright on small diameter boss

type TGLB



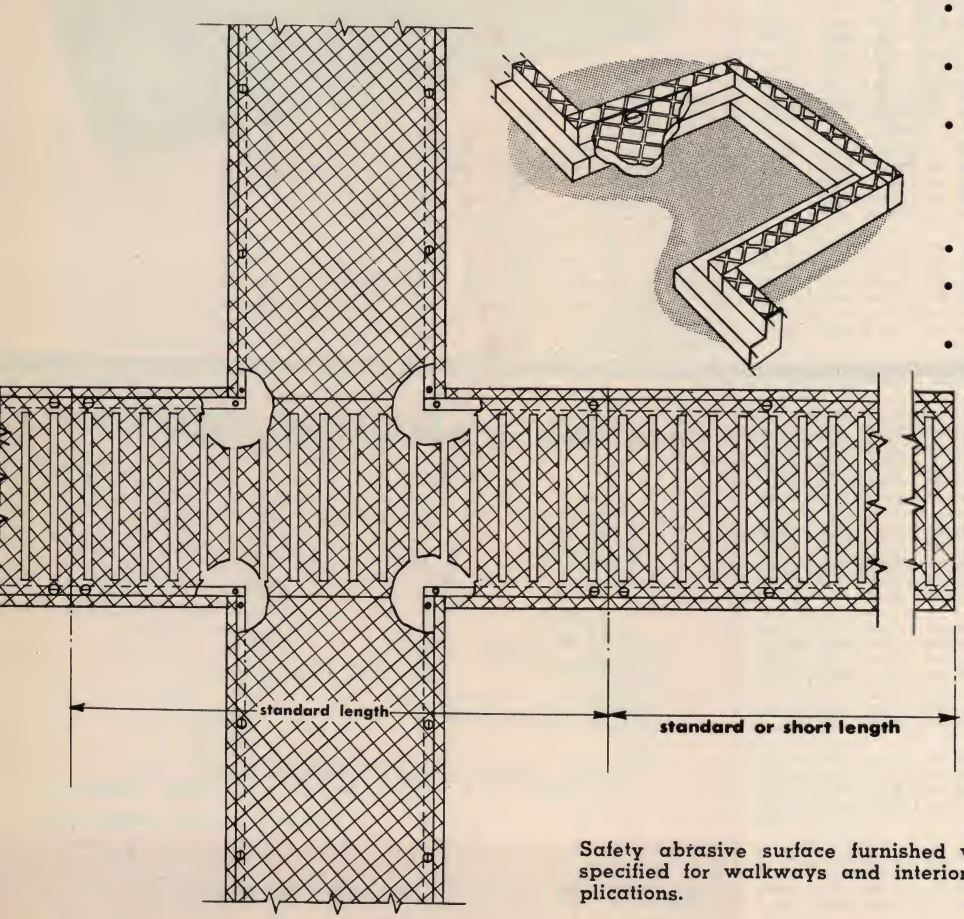
TCLB



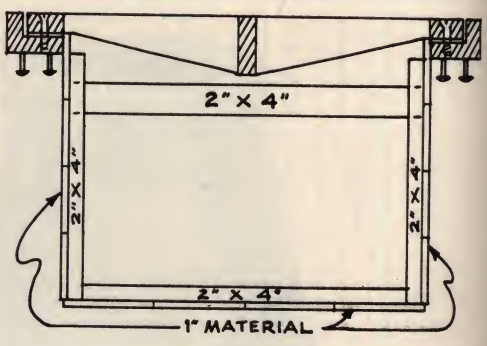
type TCLB and TGLB

type no.		width	clearance	cad plated screw size
cover	grating	W	C	
TCLB- 6	TGLB- 6	8	6	5/16
TCLB- 8	TGLB- 8	10	8	5/16
TCLB-10	TGLB-10	12	10	5/16
TCLB-12	TGLB-12	14	12	5/16
TCLB-14	TGLB-14	16	14	5/16
TCLB-16	TGLB-16	18	16	3/8
TCLB-18	TGLB-18	20	18	3/8
TCLB-22	TGLB-22	24	22	3/8
TCLB-24	TGLB-24	26	24	3/8
TCLB-30	TGLB-30	32	30	3/8
TCLB-36	TGLB-36	38	36	3/8
TCLB-42	TGLB-42	44	42	3/8

- Types TCLB-22 and TGLB-22 and narrower made in 3'-6" lengths with 3'-6" frames.
- Types TCLB-24 and TGLB-24 and wider made in 2'-0" lengths with 2'-0" frames.
- Covers and gratings are reinforced with ribs for extra factor of safety.
- 3/8" slots in TGLB grating for safe walking.
- Types TCLB and TGLB designed for walk areas and passenger car traffic.
- Furnished in iron, aluminum or bronze.
- Any length trench grating or cover made by using multiple standard length sections with short section(s).
- Different width gratings and covers may cross or branch at most any angle.
- Bearing surfaces of covers, gratings and frames ground for perfect fit.
- Covers and gratings bolted to frames with flat head screws for ease of installation and permanent insurance against rattling. Cadmium plated screws used on iron and aluminum, bronze screws used on bronze covers and gratings.
- End frames furnished when specified.
- Note illustration showing low cost installation forms that can be used with bolted types.
- Furnished in iron with plain cross-hatched surfaces unless otherwise specified.



Safety abrasive surface furnished when specified for walkways and interior applications.



Low cost forms and installation when grates and covers are bolted to frames when concrete is poured assuring perfect fit and alignment.

GENERAL INFORMATION

- Furnished in iron or aluminum.
- Different width trench covers and gratings may cross or branch at most any angle.
- Covers and gratings are reinforced with ribs for extra factor of safety.
- Bearing surfaces of covers, gratings and frames ground for perfect fit.
- Covers and gratings fasten to frames with hex head cadmium plated screws for ease of installation and permanent insurance against rattling.
- End frames furnished when specified.
- Furnished in iron unless otherwise specified.
- Note illustration on Page 10 showing low cost installation forms that can be used with bolted types.

type TCMB and TGMB

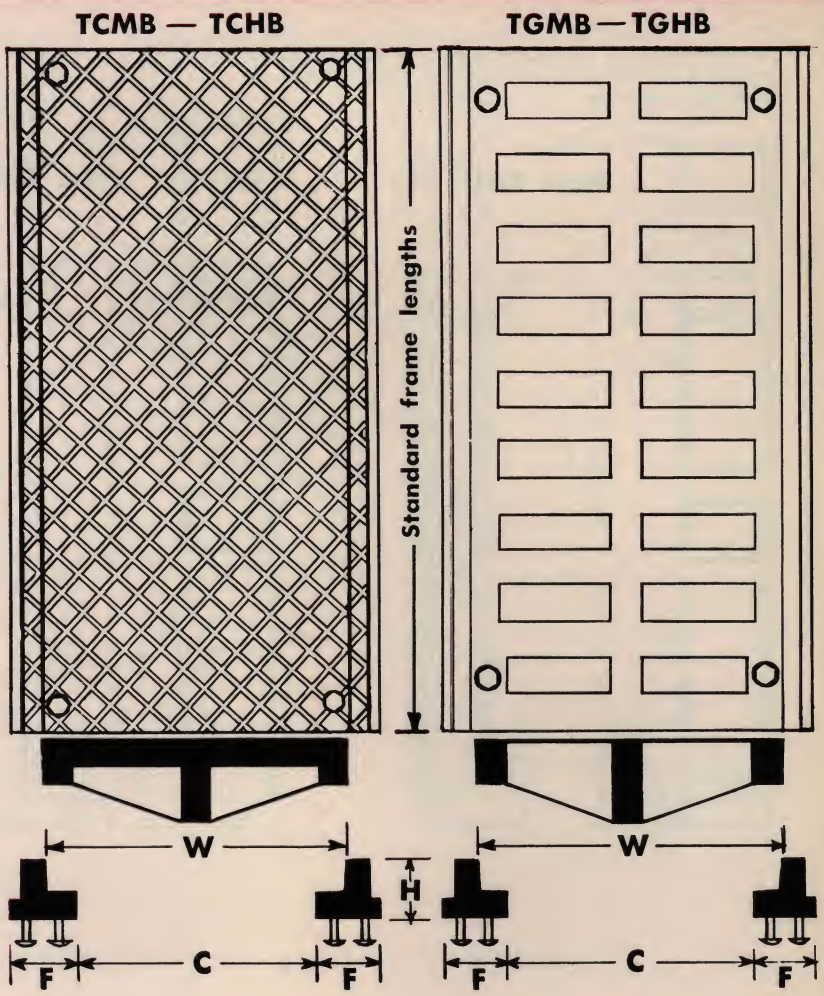
type no.		dimension in.					
cover	grating	W	C	D	H	F	long. center bars
TCMB- 6	TGMB- 6	8½	6	1¼	1¾	2⅛	0
TCMB- 8	TGMB- 8	10½	8	1¼	1¾	2⅛	0
TCMB-10	TGHB-10	12½	10	1¼	1¾	2⅛	1
TCMB-12	TGMB-12	14½	12	1¼	1¾	2⅛	1
TCMB-14	TCMB-14	16½	14	1¼	1¾	2⅛	1
TCMB-16	TGMB-16	18½	16	1¼	1¾	2⅛	2
TCMB-18	TGMB-18	20½	18	1¼	1¾	2⅛	2
TCMB-20	TGMB-20	22½	20	1½	2⅛	2¼	2
TCMB-22	TGMB-22	24½	22	1½	2⅛	2¼	2
TCMB-24	TGMB-24	26½	24	1½	2⅛	2¼	2
TCMB-26	TGMB-26	28½	26	1½	2⅛	2¼	3
TCMB-28	TGMB-28	30½	28	1½	2½	2¼	3
TCMB-30	TGMB-30	32½	30	1¾	2½	2½	3
TCMB-36	TGMB-36	38½	36	1¾	2½	2½	4
TCMB-42	TGMB-42	44½	42	2	3	2¾	5
TCMB-48	TGMB-48	50½	48	2	3	2¾	5

- Types TCMB-12 and TGMB-12 and narrower made in 3'-6" lengths with 3'-6" frames.
- Types TCMB-14 and TGMB-14 and wider made in 2'-0 lengths with 2'-0" frames.
- Covers and gratings bolted to frames with ⅜" hex head cadmium plated screws.
- Types TCMB and TGMB designed for regular roadway traffic.

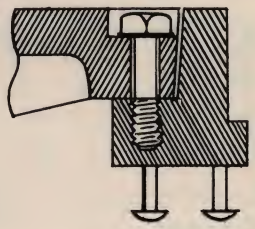
type TCHB and TGHB

type no.		dimension in.					
cover	grating	W	C	D	H	F	long. center bars
TCHB- 6	TGHB- 6	9	6	2	3¼	2½	0
TCHB- 8	TGHB- 8	11	8	2	3¼	2½	0
TCHB-10	TGHB-10	13	10	2	3¼	2½	1
TCHB-12	TGHB-12	15	12	2	3¼	2½	1
TCHB-14	TGHB-14	17	14	2½	3¾	2¾	1
TCHB-16	TGHB-16	19	16	2½	3¾	2¾	2
TCHB-18	TGHB-18	21	18	2½	3¾	2¾	2
TCHB-20	TGHB-20	23	20	2½	3¾	2¾	2
TCHB-22	TGHB-22	25	22	2½	3¾	2¾	2
TCHB-24	TGHB-24	27	24	3	4½	3	2
TCHB-26	TGHB-26	29	26	3	4½	3	3
TCHB-28	TGHB-28	31	28	3	4½	3	3
TCHB-30	TGHB-30	33	30	3	4½	3	3
TCHB-36	TGHB-36	39	36	3	4½	3	4
TCHB-42	TGHB-42	45	43	3	4½	3	5
TCHB-48	TGHB-48	51	48	3	4½	3	5

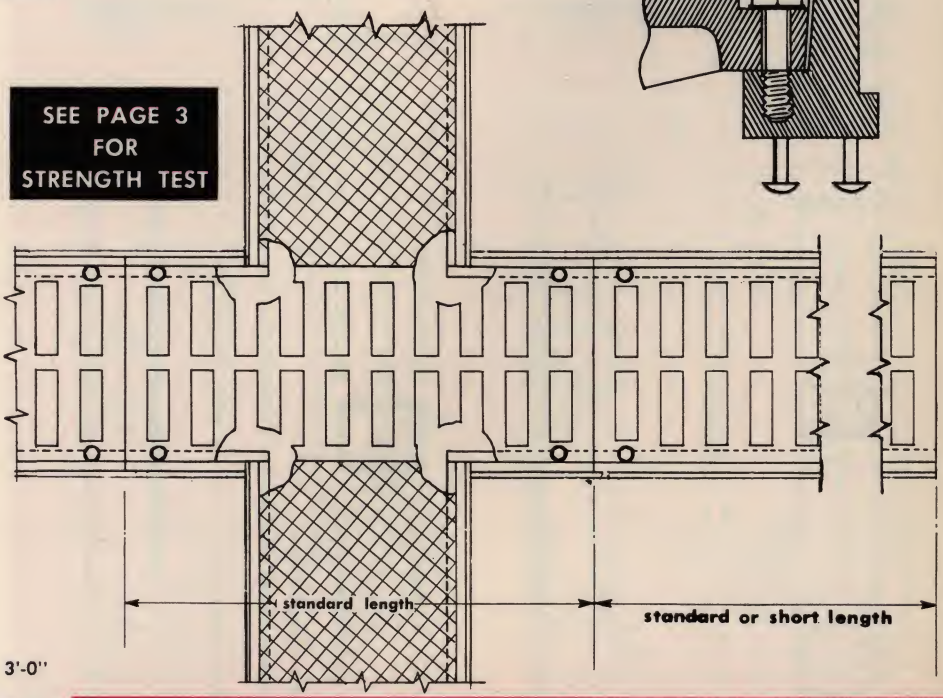
- Types TCHB-12 and TGHB-12 and narrower made in 3'-0" lengths with 3'-0" frames.
- Types TCHB-14 and TGHB-14 and wider made in 2'-0" lengths with 2'-0" frames.
- Covers and gratings bolted to frames with ½" cadmium plated hex head screws.
- Types TCHB and TGHB designed for double extra heavy roadway traffic and air field installations.



Covers and gratings bolted to frames with ½" cadmium plated hex head screws.

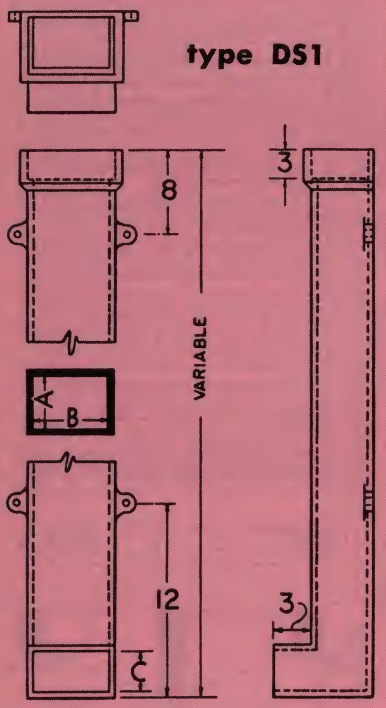


SEE PAGE 3 FOR STRENGTH TEST

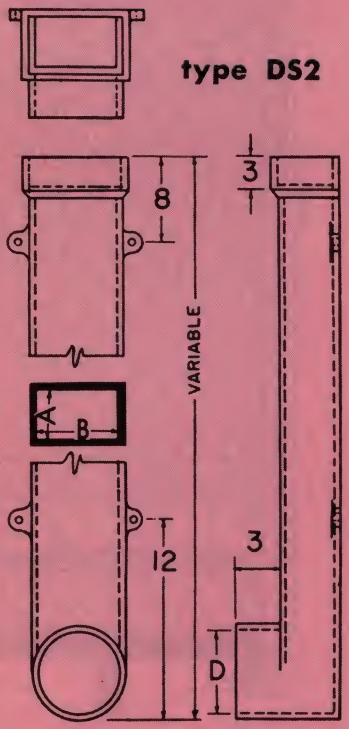


Furnished in iron primed with zinc chromate, unless specified aluminum sand - blasted, satin - finish or aluminum polished.

type DS1



type DS2



All rectangular downspout boots are designed to fit flush with building wall—all round outlets fit standard vitrified, concrete and iron soil pipe.

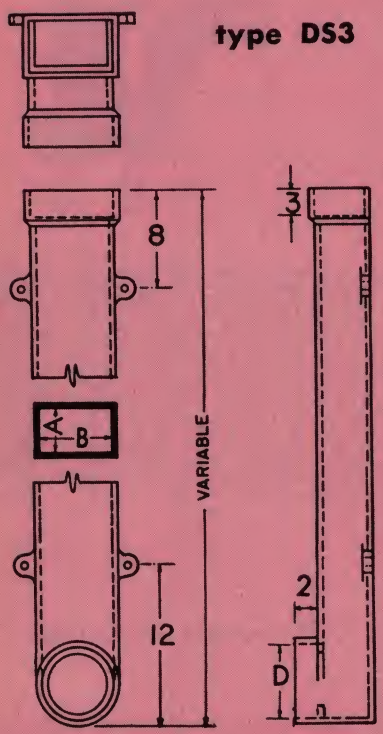
sizes A x B	dimension, in. C	D	G
3 x 4	3	4	1¼
3 x 5	3	5	1½
4 x 4	4	4	1¼
4 x 5	4	5	1½
4 x 6	4	6	1½
4 x 7	4	X	—
4 x 8	4	8	1¾
5 x 5	5	5	1½
5 x 6	5	6	1½
5 x 7	5	5	1½
5 x 8	5	8	1¾
6 x 6	6	6	1½
6 x 8	6	8	1¾
6 x 10	6	10	2
8 x 10	8	10	2¼

Any special design or special outlet furnished upon specification.

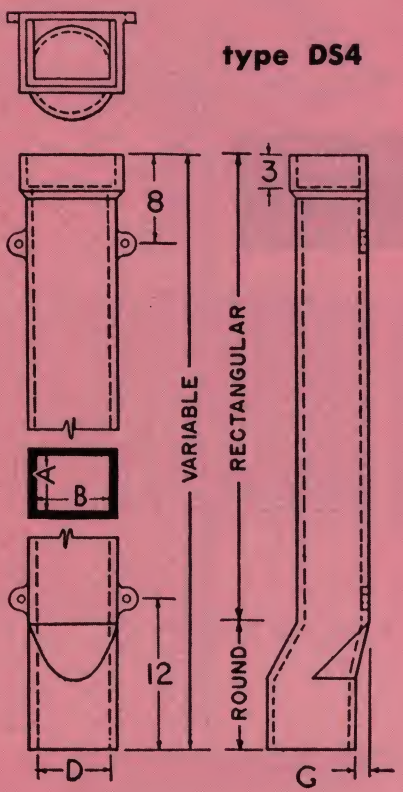
stock lengths	
1' 0"	3' 6"
1' 6"	4' 0"
2' 0"	4' 6"
2' 6"	5' 0"
3' 0"	5' 6"
6' 0"	

available in any lengths specified.

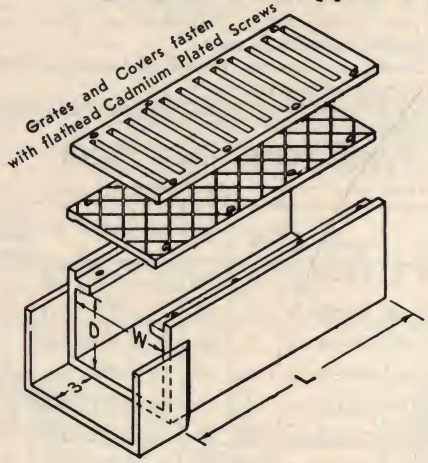
type DS3

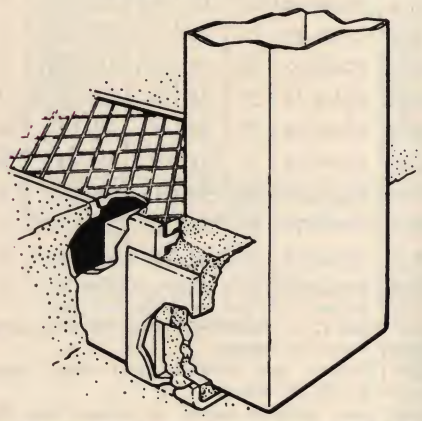


type DS4



gutter box type GB





typical downspout boot to gutter box installation

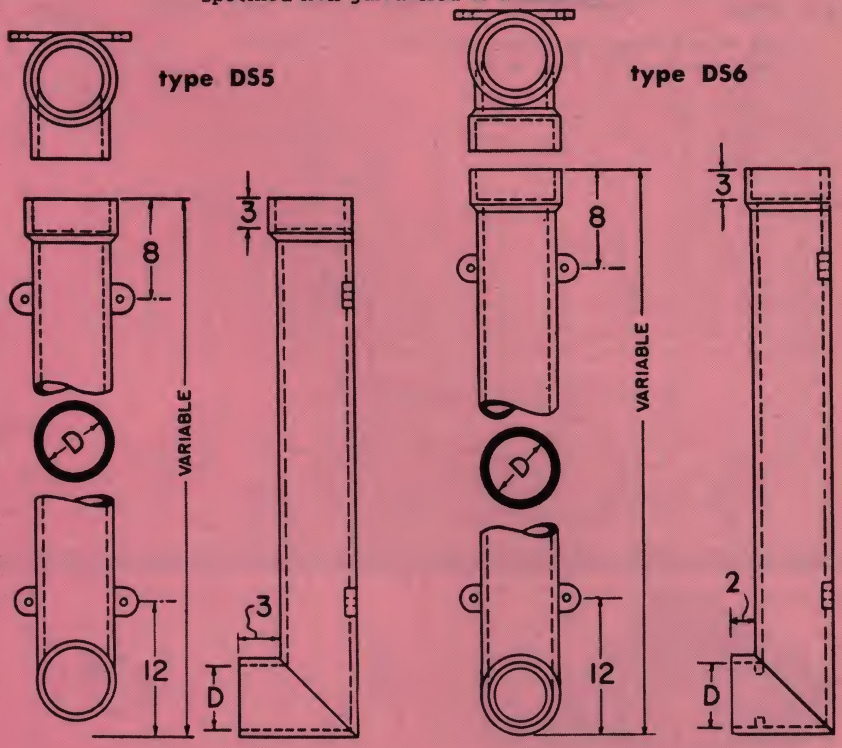
Round downspout boots designed to fit flush with building wall. All round outlets fit standard vitrified, concrete or iron soil pipe.

size	offset
D	G
3	1¼
4	1¼
5	1½
6	1½

Any special design furnished upon specification.

typical installation

Furnished in iron primed with zinc chromate unless specified iron galvanized or aluminum.



and cover-grate

Long gutter boxes made by using multiple sections of 4'0" with short section(s).

Gutter box designed for use with DS-1 downspout boot. Box dimensions "D" and "W" should give 1" clearance on top and each side of downspout boot.

For neat appearance, bell is 1" below surface.

Cover and grating fastened with flat head Cadmium plated screws

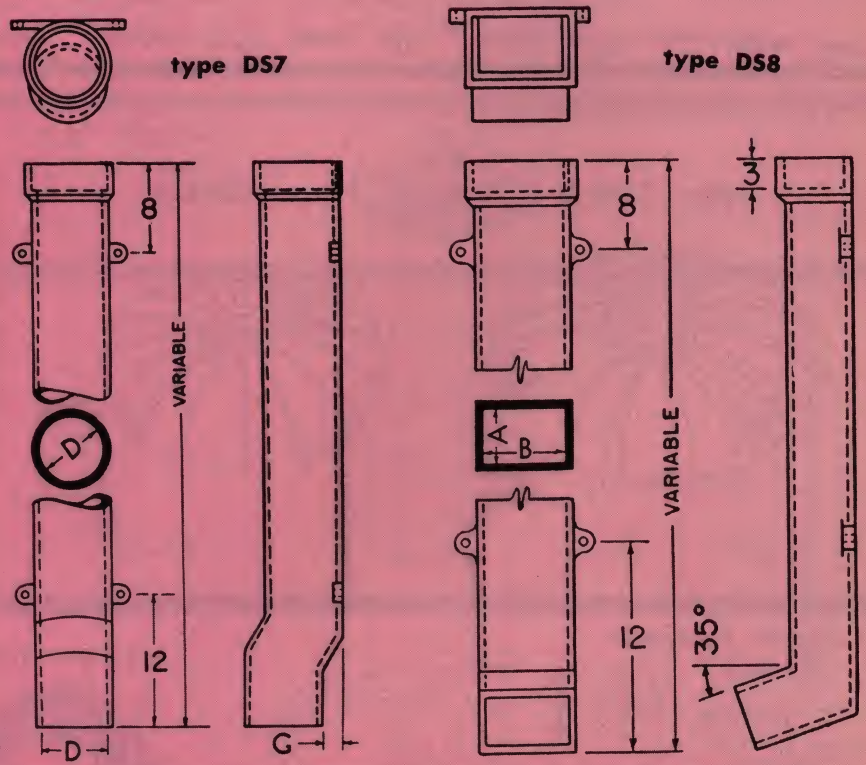
Cover and grating furnished with abrasive safety surface when requested.

gutter box
type GB

standard lengths 4'-0"

width W, in.	depth D, in.
4	4
6	4, 6
8	4, 6, 8
10	4, 6, 8, 10
12	4, 6, 8, 10, 12

Gutter box furnished in iron primed with zinc chromate unless specified aluminum.



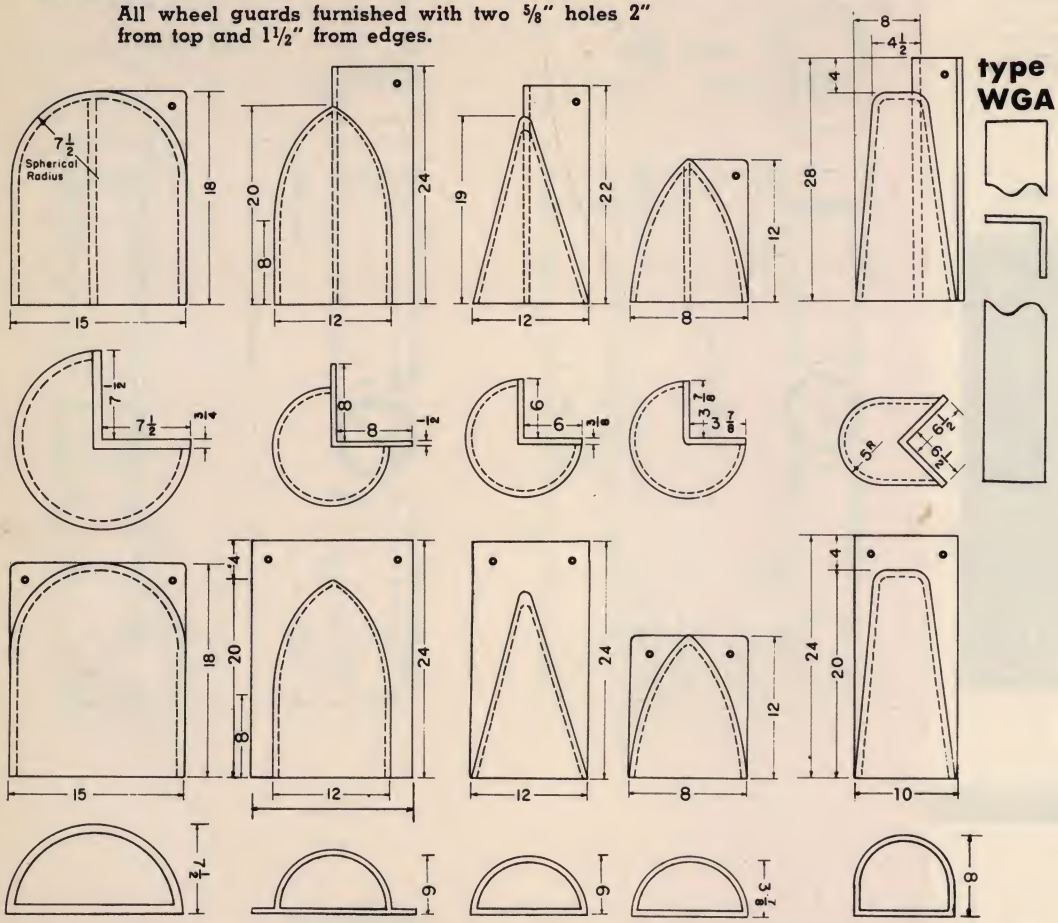
standard construction castings

Furnished in iron primed with zinc chromate, unless specified aluminum sand-blasted, satin-finish or aluminum polished.

wheel guards

type WG6 type WG7 type WG8 type WG9 type WG 10

All wheel guards furnished with two 5/8" holes 2" from top and 1½" from edges.



type WG61 type WG71 type WG81 type WG91 type WG 101

wheel guards

modern designed wheel guards are attractive and are a must. a must to protect masonry when vehicular traffic is involved.

type 6—heavy duty—for trucks —gives protection of 7½" clearance.

type 7—heavy duty—for trucks —gives 6" clearance.

type 8—for cars—6" clearance, slope on guards clears running board.

type 9—for cars—economical wheel guard, can be used on 4" jamb or mullion.

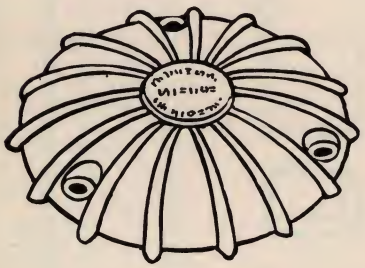
type 10—wide clearance wheel guard with high protection, can be used on narrow jamb or mullion.

WG61 thru WG101 are flat wall wheel guard for their companion corner wheel guards.

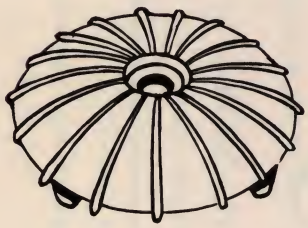
type WGA is matching angle extension furnished separately to any desired height for all types.

traffic lane markers

type TLM-2



type TLM-3



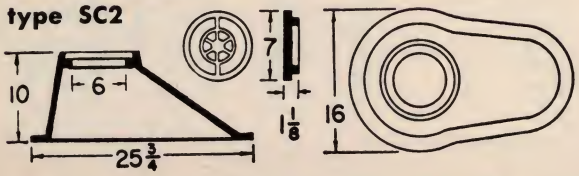
extra heavy duty traffic markers, practically indestructible. furnished with yellow glass-beaded reflection type paint. ribs on marker protect reflection type paint.

type TLM-2 — 13" in diameter, 3½" high. held in place by three ¾" bolts.

type TLM-3 — 10" in diameter, 2½' high. held in place by one ¾' bolt in center. 3 bottom lugs on perimeter optional.

sewer cleanout

type SC2



sewer cleanout type SC2-surface casting for "Y" branch

sewer saddle type SS

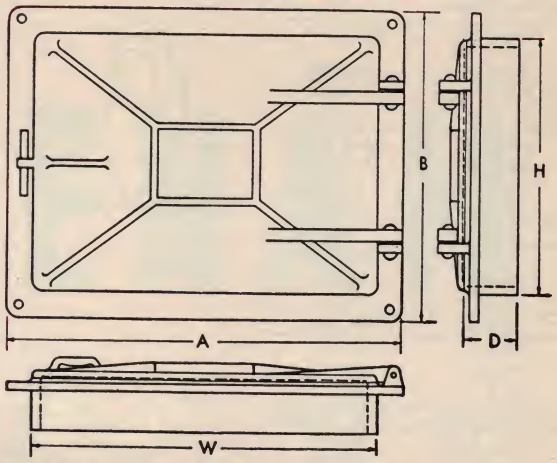
sewer saddle

Type	Size-in.
SS1	6 x 4
SS2	8 x 4
SS3	8 x 6

sizes	dimensions, in.			sizes	dimensions, in.		
W x H	D	A	B	W x H	D	A	B
8 x 8	1⅞	10	10	18 x 16	3⅛	21½	19½
8 x 12	1⅞	10	14	18 x 18	3⅛	21½	21½
12 x 8	1⅞	14	10	18 x 20	3⅛	21½	23½
12 x 12	2¼	14½	14½	18 x 24	3⅛	21½	27½
12 x 14	2¼	14½	16½	20 x 18	3⅛	23½	21½
12 x 16	2¼	14½	18½	20 x 20	3⅛	23½	23½
14 x 12	2¼	16½	14½	20 x 24	3⅛	23½	27½
14 x 14	2¼	16½	16½	24 x 18	3⅛	27½	21½
14 x 16	2¼	16½	18½	24 x 20	3⅛	27½	23½
16 x 12	2¼	18½	14½	24 x 24	3⅛	27½	27½
16 x 14	2¼	18½	16½	24 x 30	3⅛	27½	33½
16 x 16	2¼	18½	18½	24 x 36	3⅛	27½	39½
16 x 18	3⅛	19½	21½	30 x 24	3⅛	33½	27½

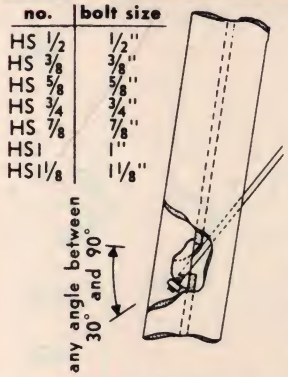
1. Modular and other standard sizes for easy masonry installations.
2. Furnished with double catch and special hinge lugs to be used for either right or left hand door openings.
3. Raised seats on both frames and doors for ground surface fit.
4. Extra heavy construction to withstand abuse.
5. Can furnish with locking hasp when specified.

frame and door, cast iron type CO

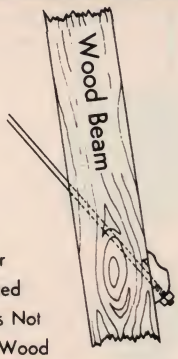


Furnished in iron primed with zinc chromate, unless specified aluminum sand-blasted, satin-finish or aluminum polished.

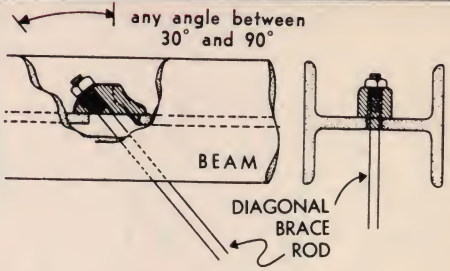
no.	bolt size
HS ½	½"
HS ⅜	⅜"
HS ⅝	⅝"
HS ¾	¾"
HS ⅞	⅞"
HS 1	1"
HS 1⅛	1⅛"



I-Beam, H-Section or Angle tank braces

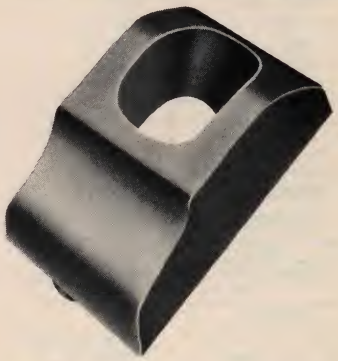


Wood brace or beam



on all diagonal brace rods eliminate

- **turnbuckles**
- **rod bending**
- **threading costs for turnbuckles**



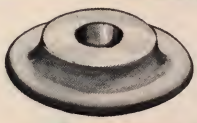
hillside washers

(the bevel washer for any angle between 30° and 90°)

no.	bolt size	no.	bolt size
OG ½	½"	OG1	1"
OG ⅝	⅝"	OG1⅛	1⅛"
OG ¾	¾"	OG1¼	1¼"
OG ⅞	⅞"		

o.g. washers

heavy-duty washers for all requirements



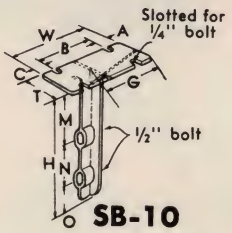
type SB seat brackets

Dimension	type no. SB-10	SB-20	SB-30	SB-40	SB-50	SB-50B
A	2	1½	1½	4½	1	
B	4	3¾	3¾	3⅞	3	
C	2	3¾	3¾	3⅞	3	
D	1½	1½	1¾	1¾	1	
G	4½	4	4		2	
H	12	15	16	15	14	
L						19
M	6	10¼	12¼	3	9⅜	
N	4	4	3	10¾	4	
O	2	¾	¾	1¼	⅜	
S						2½
T	4	3¾	3¾	2½	4	4
U						1¾
W	8	10½	10½	14	8	
Y						7

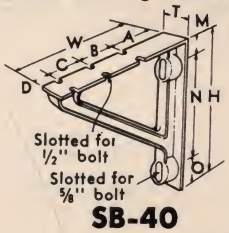
SB-20 and SB-30 have 2° reverse incline

SB-40 has 3° reverse incline.

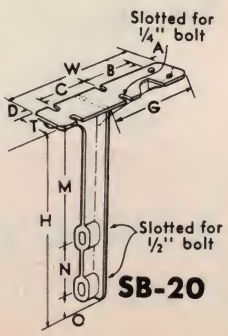
Furnished in iron primed with zinc chromate unless specified iron galvanized or aluminum.



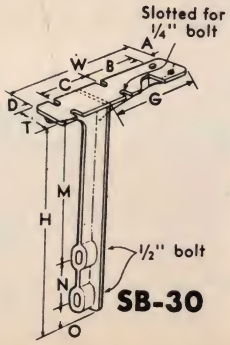
SB-10



SB-40

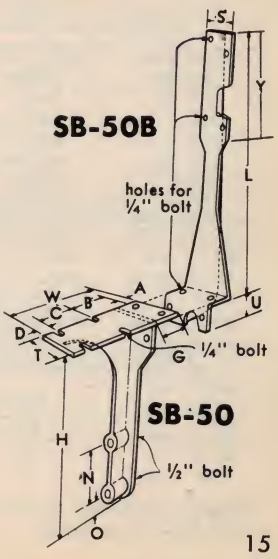


SB-20



SB-30

SB-50B



SB-50

hand rail fittings

fittings with "A" prefix furnished in aluminum and bronze
fittings with "B" prefix furnished in iron and galvanized iron

bronze, iron and aluminum hand rail fittings

state finish wanted
bronze—satin finish bronze—polished aluminum—satin finish aluminum — polished-alloy 214 suitable for alumiliting.

types nos. N brackets	types nos. N brackets
1¼"-1½" pipe	flat
2" rd. wood	seats
AAR-2½	AAF-2½
AAR-3	AAF-3
AR-2½	AF-2½
AR-3	AF-3
elbows	**tees**
AL-1¼	AT-1¼
AL-1½	AT-1½
AL-2	AT-2
crosses	**pipe plugs**
AX-1¼	AP-1¼
AX-1½	AP-1½
AX-2	AP-2
wall returns	**floor flanges**
AW-2½	AB-1¼
AW-3	AB-1½
	AB-2

round cover flanges	square cover flanges
ARF- ¾	ASF-1
ARF-1	ASF-1¼
ARF-1¼	ASF-1½
ARF-1½	ASF-1¾
ARF-2	ASF-2
finials	
AF-3	
AF-4	

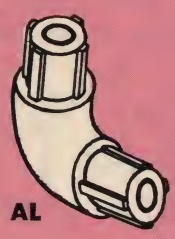
black or galvanized hand rail fittings

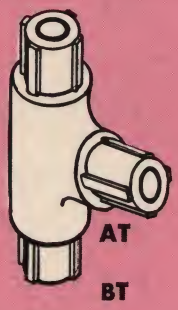
state finish wanted

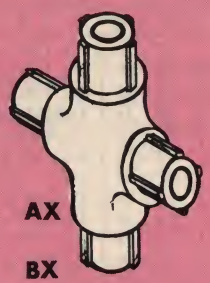
types nos. N brackets	types nos. N brackets
1¼"-1½" pipe	flat
2" rd. wood	seats
BR-2½	BF-2½
BR-3	BF-3
BBR-2½	BBF-2½
BBR-3	BBF-3
elbows	**tees**
BL-1¼	BT-1¼
BL-1½	BT-1¼
BL-2	BT-2
crosses	**pipe plugs**
BX-1¼	BP-1¼
BX-1½	BP-1½
B-2	BP-2
wall returns	**floor flanges**
BW-2½	BB-1¼
BW-3	BB-1½
	BB-2

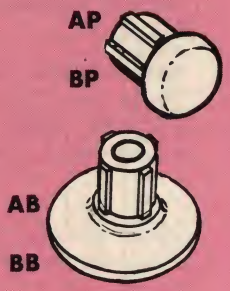
round cover flanges	square cover flanges
BRF- ¾	BSF-1
BRF-1	BSF-1¼
BRF-1¼	BSF-1½
BRF-1½	BSF-1¾
BRF-2	BSF-2
newel post caps and drops	
BC-1½ x 1½	BD-3½ x 3½
BC-2 x 2	BD-3 x 3½
BC-2½ x 2½	BD-4 x 4
BC-3 x 3	**sq. post fittings**
BC-3½ x 3½	BPF-1¼
BC-4 x 4	BPF-1½
BC-3 x 4	
BC-3 x 5	**finials**
BC-3 x 6	BF-3
BC-3 x 8	BF-4
BC-4 x 6	
BC-4 x 8	

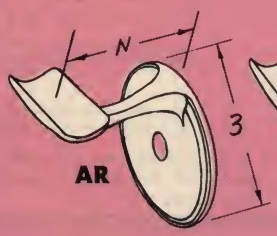
N = pipe or tubing sizes except in bracket N = inches

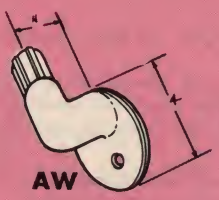


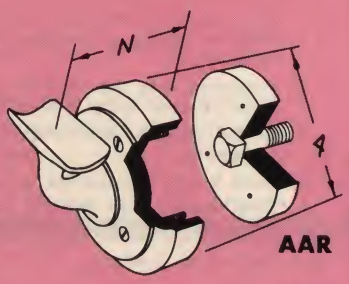


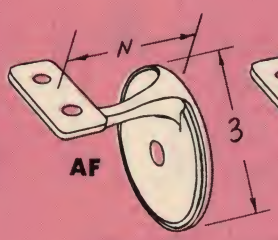


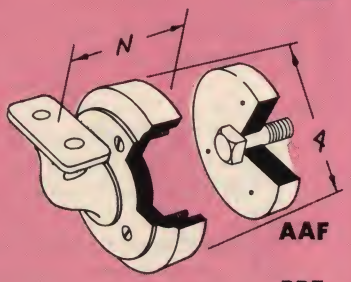


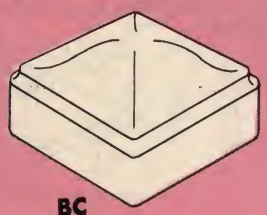


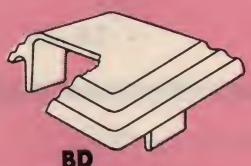




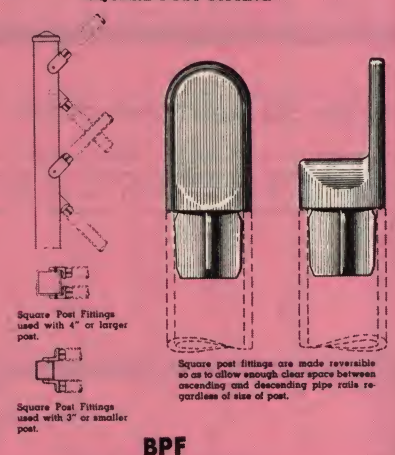








SQUARE POST FITTING


Square Post Fittings used with 4" or larger post.
Square Post Fittings used with 3" or smaller post.
Square post fittings are made reversible so as to allow enough clear space between ascending and descending pipe rails regardless of size of post.
BPF

mckinley iron works

p. o. box 790, fort worth, texas

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